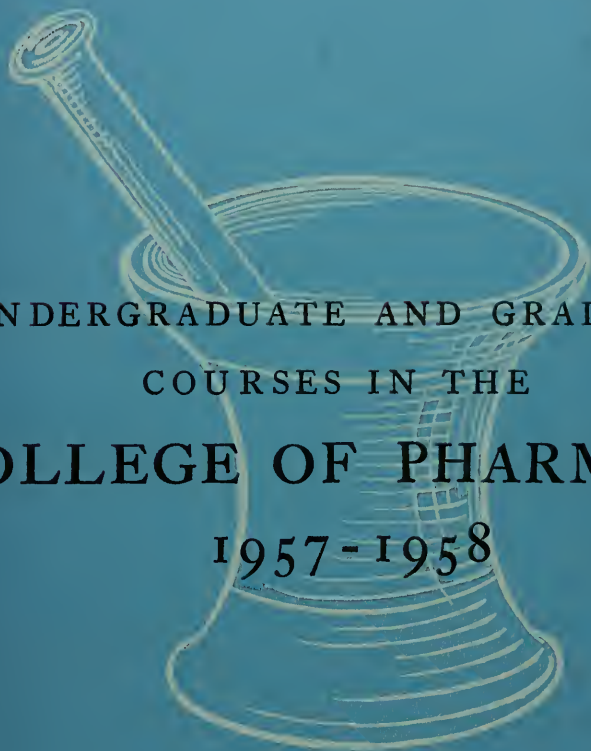


COLUMBIA UNIVERSITY
BULLETIN OF INFORMATION

Fifty-seventh Series, No. 3

January 19, 1957

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UNDERGRADUATE AND GRADUATE
COURSES IN THE
COLLEGE OF PHARMACY
1957-1958

113-119 WEST 68TH STREET
NEW YORK 23, N. Y.

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1957-1958
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The College of Pharmacy is a member of the American Association of Colleges of Pharmacy and is accredited as a Class A college by the American Council on Pharmaceutical Education, thus ensuring eligibility for licensure in all states and the District of Columbia.

Graduates are qualified for challenging positions in retail pharmacy, hospital pharmacy, industrial pharmacy, government, and other areas.

For special or more detailed information than is given in this bulletin, consult the Registrar of the College, 113 West 68th Street, New York 23, N.Y. Office hours: daily except Saturdays, 9 A.M. to 5 P.M. The telephone number is TRafalgar 7-1733.

The College of Pharmacy reserves the right to make such changes in the curriculum, schedule, calendar, and regulations appearing in this bulletin as circumstances may require.

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THE COLLEGE OF PHARMACY
OF THE CITY OF NEW YORK

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FOR THE ACADEMIC YEAR 1956-1957

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THE COLLEGE OF PHARMACY

The College of Pharmacy had its inception in a meeting of prominent pharmacists of the city on March 18, 1829, at which a constitution was adopted, membership conditions established, and provision made for conducting courses of lectures. It has been continuously active as a teaching institution since that time. The first lecturers were Dr. John Torrey, in physics and chemistry, and Dr. Stephen Brown, in materia medica. The college was granted a charter on April 25, 1831, and three students were awarded diplomas in that year. From 1829 to 1878 the teaching functions were maintained in quarters rented from other institutions, among which were the New York Dispensary, Columbia College, the Lyceum of Natural History, New York University, and New York Medical College.

It is particularly significant that at two periods during those early days the instruction was given in the building of Columbia College, thus foreshadowing the relations existing at present. In 1878 the College of Pharmacy purchased its own building, a church on East 23d Street, remodeled it, and remained at that location until 1893, when the present site was acquired. An important event in the later history of the college was the affiliation with Columbia University. Dr. Charles F. Chandler and Dr. Henry H. Rusby were instrumental in consummating this agreement whereby the institution, in 1904, became the College of Pharmacy of the University.

The interests of the College have always been more than merely local, and in 1851 delegates from the three other colleges of pharmacy then in existence were invited to meet for the purpose of considering the establishment of standards for drugs. A second meeting for the same purpose was held in Philadelphia in 1852. As a result of these meetings the American Pharmaceutical Association was established.

In early days when the instruction was less diverse, the teaching staff consisted in the main of men active in other institutions who gave a certain amount of their time and talents to the College of Pharmacy. Among these teachers were Torrey, Doremus, Mayer, Maisch, Chandler, Squibb, Rusby, and others, noted in their fields, willing to associate themselves with a small institution and even to furnish the equipment necessary for teaching purposes. To a teaching staff meager in number but notable in reputation, additions have been made continuously, and the curriculum has been amplified to meet increasing demands.

The undergraduate program in pharmacy, leading to the degree of Bachelor of Science conferred by Columbia University, fulfills the educational requirements for admission to the state licensing examinations throughout the country. It provides a general scientific education for service in the many areas of pharmaceutical activity.

Since 1897 the College has also provided programs of instruction for those desiring more than the basic study for licensure. The present graduate program leads to the degree of Master of Science and offers opportunity for specialization in pharmaceutical control, industrial pharmaceutical manufacturing, product development, pharmacognosy, pharmacology, microbiology of pharmaceutical products, or synthesis of medicinal products.

PROGRAMS OF STUDY

I. FOR THE BACHELOR OF SCIENCE DEGREE

The only undergraduate program offered is that of four academic years, occupying five days of the week and leading to the degree of Bachelor of Science in pharmacy conferred by Columbia University.

The candidate for the degree of Bachelor of Science must meet the following requirements:

1. He must be of good moral character and physically fitted for the practice of pharmacy.
2. He must have successfully completed the courses required for the degree. In the case of those admitted with advanced standing, a diploma will not be issued for less than the equivalent of one full academic year of resident study.
3. He must achieve a passing grade in all subjects required for the degree and must have demonstrated general scholastic fitness by the maintenance of the satisfactory quality point average required for advancement and for graduation.
4. He must have discharged all financial obligations to the college.

CURRICULUM FOR THE BACHELOR OF SCIENCE DEGREE

| | | <i>Class Laboratory</i> | | |
|----------------------|-------------------------------------|-------------------------|--------------|---------------|
| | | <i>Hours</i> | <i>Hours</i> | <i>Points</i> |
| <i>Freshman</i> | | | | |
| <i>Biol. 21</i> | General botany | 2 | 4 | 4 |
| <i>Biol. 22</i> | Zoology | 2 | 4 | 4 |
| <i>Chem. 3-4</i> | General chemistry | 3 | 4 | 10 |
| <i>Eng. A1-A2</i> | English | 3 | | 6 |
| <i>Math. 7-8</i> | Mathematical analysis | 3 | | 6 |
| <i>S. S. A1-A2</i> | Social science and ethics | 3 | | 6 |
| <i>Sophomore</i> | | | | |
| <i>Chem. 11</i> | Qualitative analysis | 2 | 6 | 5 |
| <i>Chem. R43</i> | Organic chemistry | 3 | 6 | 6 |
| <i>Phar. 1-2</i> | Pharmacy orientation | 1 | | 2 |
| <i>Phar. 17</i> | Pharmaceutical calculations | | 4 | 2 |
| <i>Phar. 21-22</i> | Pharmaceutical technology, I and II | 3 | 4 | 10 |
| <i>Phar. R51</i> | Pharmaceutical economics, I | 2 | 2 | 3 |
| <i>Phys. 1-2</i> | General physics | 3 | 2 | 8 |
| <i>Junior</i> | | | | |
| <i>Biol. 37</i> | Human physiology | 3 | 4 | 5 |
| <i>Chem. R44</i> | Organic chemistry | 3 | 6 | 6 |
| <i>Chem. 66</i> | Quantitative analysis | 2 | 6 | 5 |
| <i>Chem. 70</i> | Biochemistry | 3 | | 3 |
| <i>Pharmacog. 38</i> | Pharmacognosy | 3 | 4 | 5 |
| <i>Phar. 3</i> | Contemporary pharmacy, I | 1 | | 1 |
| <i>Phar. 23-24</i> | Dispensing pharmacy, I and II | 3 | 4 | 10 |
| <i>Phar. 50</i> | Physical pharmacy | 2 | | 2 |
| <i>Phar. R52</i> | Pharmaceutical economics, II | 3 | | 3 |

6 • PROGRAMS OF STUDY

| | | <i>Class Laboratory</i> | | |
|------------------------|--------------------------------------|-------------------------|--------------|---------------|
| <i>Senior</i> | | <i>Hours</i> | <i>Hours</i> | <i>Points</i> |
| <i>Biol. 55 or R55</i> | Bacteriology and public health | 4 | 6 | 7 |
| <i>Chem. 81 or R81</i> | Pharmaceutical analysis | 2 | 8 | 6 |
| <i>Pharmacol. 47</i> | Pharmacology | 5 | | 5 |
| <i>Pharmacol. 48</i> | Pharmacology | 4 | 3 | 5½ |
| <i>Phar. 4</i> | Contemporary pharmacy, II | 1 | | 1 |
| <i>Phar. 26</i> | Dispensing pharmacy, III | 1 | 4 | 3 |
| <i>Phar. 49</i> | Pharmaceutical technology, III | 2 | 4 | 4 |
| <i>Phar. 53</i> | Pharmaceutical jurisprudence | 3 | | 3 |
| <i>Phar. 55-56</i> | Pharmacy and chemistry of medicinals | 3 | | 6 |

Students enrolled before September, 1955, will complete the following curriculum:

| <i>Senior</i> | | | | |
|------------------------|--------------------------------------|---|---|---|
| <i>Biol. 55 or R55</i> | Bacteriology and public health | 4 | 6 | 7 |
| <i>Chem. 81 or R81</i> | Pharmaceutical analysis | 2 | 8 | 6 |
| <i>Pharmacol. 47</i> | Materia medica and toxicology, I | 5 | | 5 |
| <i>Pharmacol. 48</i> | Materia medica and toxicology, II | 4 | 2 | 5 |
| <i>Phar. 47-48</i> | Dispensing pharmacy, III and IV | | 4 | 4 |
| <i>Phar. 49</i> | Pharmaceutical technology, III | 2 | 2 | 3 |
| <i>Phar. R53</i> | Pharmaceutical jurisprudence | 3 | | 3 |
| <i>Phar. 55-56</i> | Pharmacy and chemistry of medicinals | 4 | | 8 |

II. FOR THE MASTER OF SCIENCE DEGREE

A graduate program of not less than one full year of study nor less than thirty points leading to the degree of Master of Science conferred by the University is open to graduates with the baccalaureate degree in pharmacy conferred by this college or other schools maintaining equivalent programs of study. Graduate studies are under the direction of the Graduate Committee of the Faculty of Pharmacy. A person registered for ten points or more during one session is classified as a full-time student.

The candidate for the degree of Master of Science must meet the following requirements:

1. The minimum requirements as to courses shall be thirty points, to be completed in not less than one year of resident study. At least twenty of these thirty points of graduate study shall be completed in courses offered by the College of Pharmacy. The remainder may be chosen, subject to the approval of the Graduate Committee of the Faculty of Pharmacy, from courses offered by other units of the University.
2. The candidate shall be required to demonstrate a satisfactory reading knowledge of scientific German or French.
3. The candidate shall participate satisfactorily in the graduate seminars held during his residency.
4. The candidate shall be required to prepare and present a satisfactory essay upon a topic approved by the Graduate Committee of the Faculty of Pharmacy.
5. Before being recommended for the degree, the candidate shall pass an examination by a committee designated by the Dean.

Candidates for the degree of Master of Science may major in one of the following fields: pharmaceutical control; industrial pharmaceutical manufacturing; product development; pharmacognosy; pharmacology; microbiology of pharmaceutical products; synthesis of medicinal products.

COLLEGE OF PHARMACY COURSES ACCEPTABLE FOR THE
MASTER OF SCIENCE DEGREE

| | | <i>Points</i> |
|----------------------------|-----------------------------------------------------------|---------------|
| <i>Biol. 101</i> | Microbiological control methods | 6 |
| <i>Phar. Chem. 105-106</i> | Preparation of chemotherapeutic and pharmaceutical agents | 10 |
| <i>Phar. Chem. 107-108</i> | Pharmaceutical control methods | 5 |
| <i>Phar. Chem. 201-202</i> | Chemistry of natural medicinal products | 4 |
| <i>Phar. Chem. 205-206</i> | Modes of drug action | 6 |
| <i>Pharmacog. 101-102</i> | Applied pharmacognosy | 10 |
| <i>Pharmacog. 103</i> | Microscopical control methods | 2 |
| <i>Pharmacol. 107-108</i> | Drug screening and bio-assay methods | 6 |
| <i>Phar. 101 or R101</i> | Dermatologic and other topical vehicles | 2 |
| <i>Phar. 109-110</i> | Industrial pharmaceutical manufacturing | 9 |
| <i>Phar. 219-220</i> | Projects in drug product development | 4 |
| <i>Research 201-202*</i> | Research† | |

There are available in other departments of the University a wide selection of graduate courses in the fields of chemistry, biology, chemical engineering, hospital administration, industrial engineering, and education which may be offered toward the M.S. degree subject to approval by the Graduate Committee of the Faculty of Pharmacy. For information regarding these courses, consult the bulletins of the individual schools.

* If it becomes necessary for a graduate student to extend his research, the same course number followed by the symbol X will be used.

† Points to be determined.

COURSES OF INSTRUCTION

Odd numbers and even numbers preceded by *R* indicate winter session courses; even numbers and odd numbers preceded by *R* indicate spring session courses. Courses which are designated 55-56, etc., extend through both the winter and spring sessions, and the winter session course is prerequisite to that of the spring session.

Courses in small type are not given in 1957-1958.

The University reserves the right to withdraw or modify the courses of instruction or to change the instructors as may be necessary.

UNDERGRADUATE COURSES

BIOLOGY, PHARMACOGNOSY, AND PHARMACOLOGY

Departmental Representative: Professor Frank J. Pokorny

Biology 21—General botany. Two hours class and four hours laboratory. 4 pts. Winter. Professor Pokorny, Miss Kelz, and assistants.

The cytology, histology, anatomy, and certain physiological processes of plants are studied. The evolutionary development of plants is shown through a study of representative examples of the different phyla.

Biology 22—Zoology. Two hours class and four hours laboratory. 4 pts. Spring. Professor Staud, Mrs. Sinai, and assistants.

An introductory survey of the general principles of the zoology, taxonomy, anatomy, physiology, and development of animals. The structure of representative types is studied in the laboratory by means of microscopic and macroscopic observations, dissections, and demonstrations with special emphasis upon the vertebrates.

Biology 37—Human physiology. Three hours class and four hours laboratory. 5 pts. Winter. Professors Clay and Staud, Mrs. Sinai, and assistants.

Lectures emphasize the physical and chemical processes in mammals, the cells, tissues and organs, and organ systems that carry on these processes, together with their nervous and humoral integration. The laboratory is concerned with individual experiments and observations of primary physiological processes. A general background is provided for an understanding of drug action in pharmacology.

Biology 55 or R55—General bacteriology and public health. Four hours lecture and six hours laboratory. 7 pts. either session. Professor Clausen and assistants.

This course deals with the general principles of microbiology and public health with special emphasis upon the physiology of the etiological agents of disease. The lectures include the epidemiology, symptomatology, therapy, and prophylaxis as well as the clinical and laboratory methods for the identification of the communicable diseases. The laboratory exercises are concerned with the standard methods of analysis and identification of bacterial cultures; the examination of water, milk, throat cultures, sputum, and disinfectants; and antibiotic assays.

Pharmacognosy 38—Pharmacognosy. Three hours class and four hours laboratory. 5 pts. Spring. Professor Pokorny, Miss Kelz, and assistants.

This course deals with the study of U.S.P., N.F., and certain nonofficial drugs of plant and animal origin. These are considered in gross, section, and powdered form with microchemistry and micrometry used as aids in their study and identification. Stress is placed on biochemical constituents and their uses. Plant hormones, antibiotics, allergens, insecticides, and related topics are included.

Prerequisite: *Biology 21* or equivalent.

Pharmacology 47-48—Pharmacology. Winter: five hours lecture; Spring: four hours lecture and two hours laboratory. 5 pts. each session. Professors Clay and Staud, Mrs. Sinai, and assistants.

The pharmacologic action and therapeutic use of official and nonofficial drugs are considered. Special emphasis is placed upon the nature of the important pathologic states. Lecture demonstrations and laboratory experiments are designed to demonstrate the pharmacologic response of important type-drugs.

Prerequisite: *Biology 37* or equivalent.

CHEMISTRY

Departmental Representative: Professor Abraham Taub

Chemistry 3-4—General chemistry. Three hours lecture, three hours laboratory, and one hour conference. 5 pts. each session. Professor Bailey and assistants.

A course in the fundamental principles of chemistry. The basic concepts of chemistry are introduced, the quantitative aspects of the subject are stressed, and the modern ideas of atomic and molecular structure are utilized to give a foundation for an understanding of the science. Individual laboratory practice is an integral part of the course.

Chemistry 11—Qualitative analysis. Two hours class and six hours laboratory. 5 pts. Winter, Professor Liberman and assistants.

The basic theory of qualitative analysis and the reactions involved in the separation and identification of the more common ions.

Prerequisite: *Chemistry 4*.

Chemistry 43-44 or R43-R44—Organic chemistry. Three hours class and six hours laboratory. 6 pts. each session. Professors Di Somma and Malspeis, and assistants.

A comprehensive two-term course in elementary organic chemistry, based on modern theoretical principles. It covers the synthesis and reactions of the different classes of organic compounds in the aliphatic and aromatic series, including applications to medicinal compounds.

Prerequisite: *Chemistry 4*.

Chemistry 66—Quantitative analysis. Two hours class and six hours laboratory. 5 pts. Spring. Professor Liberman and assistants.

This course includes the discussion of the theory and chemical calculations of inorganic quantitative analysis. The laboratory work covers the more important volumetric and gravimetric methods.

Prerequisite: *Chemistry 11*.

Chemistry 70—Biochemistry. Three hours class. 3 pts. Spring. Professor Malspeis.

An introduction to the study of the organic constituents of the cell and the chemical and physico-chemical processes which go on in living systems.

Prerequisite: *Chemistry 43*.

Chemistry 81 or R81—Pharmaceutical analysis. Two hours lecture and eight hours laboratory. 6 pts. either session. Professor Taub and assistants.

The typical methods of determining the purity and strength of official organic medicinals and their preparations.

Prerequisite: *Chemistry 66* and *Chemistry 44*.

PHARMACY

Departmental Representative: Professor Leonard T. Chavkin

Pharmacy 1-2—Pharmacy orientation. One hour class. 1 pt. each session. Dean Leuallen and Dr. Lipman.

The history and development of the profession with discussion of areas of service and opportunities.

Pharmacy 3—Contemporary pharmacy, I. One hour class. 1 pt. Winter. Dean Leuallen.

An analysis of current activities, accomplishments, and problems of the profession.

Pharmacy 4—Contemporary pharmacy, II. One hour class. 1 pt. Spring. Dean Leuallen.

A continuation of *Pharmacy 3*.

Pharmacy 17—Pharmaceutical calculations. Four hours conference. 2 pts. Winter. Professors Weingold and Dashowitz.

A study of the calculations employed in the prescription department.

Prerequisite: *Chemistry 4*.

Pharmacy 21-22—Pharmaceutical technology, I and II. Winter: Three hours class and four hours laboratory, 5 pts. each session. Professor Weingold and assistants.

A study of the fundamental principles and processes of pharmacy, including official preparations.
Prerequisite: *Chemistry 4*.

Pharmacy 23-24—Dispensing pharmacy, I and II. Three hours class and four hours laboratory, 5 pts. each session. Professors Kanig and Dashowitz, and assistants.

Winter: An introduction to prescription compounding including the elements of pharmaceutical Latin. The principles learned in the technology courses are applied to the compounding of prescriptions. Comparison is made of the various forms in which medication may be dispensed.

Spring: Emphasis is placed on prescriptions which require special compounding technique and the correction of incompatibilities.

Prerequisite: *Pharmacy 17 and Pharmacy 22*.

Pharmacy 26—Dispensing pharmacy, III. One hour class and four hours laboratory, 3 pts. Spring. Professor Kanig and assistants.

Advanced compounding techniques applied to prescription practice and professional service.

Pharmacy 47-48—Dispensing pharmacy, III and IV. Four hours laboratory, 2 pts. each session. Professors Kanig and Dashowitz, and assistants.

Experience in the compounding of all types of prescriptions selected from active prescription files. Problems associated with the dispensing of pharmaceutical specialties in combination with other medications are discussed and many of the specialties are used in the laboratory.

Prerequisite: *Pharmacy 24*.

Pharmacy 49—Pharmaceutical technology, III. Two hours class and two hours laboratory, 3 pts. Winter. Professor Chavkin and assistant.

A study of advanced manufacturing and compounding techniques involving the use of newer materials such as surface active agents and synthetic products as employed in the manufacture of cosmetics and dermatological vehicles.

Prerequisite: *Pharmacy 22 and Chemistry 43*.

Pharmacy 50—Physical pharmacy. Two hours, 2 pts. Spring. Dr. Kuramoto.

Discussion of certain fundamental physico-chemical principles and their application to pharmaceutical processes.

Prerequisite: *Chemistry 43*.

Pharmacy 51 or R51—Pharmaceutical economics, I. Two hours lecture and two hours laboratory, 3 pts. either session. Dr. Lazarus.

Principles of accounting and business law as related to the practice of retail pharmacy.

Pharmacy R52—Pharmaceutical economics, II. Three hours lecture, 3 pts. Professor Chavkin.

A consideration of the general business principles involved in the operation of a pharmacy, including management and merchandising.

Pharmacy 53 or R53—Pharmaceutical jurisprudence. Three hours lecture, 3 pts. either session.

The basic elements of the American governmental system, federal, state, and municipal, followed by a detailed analysis of legislative enactments and administrative regulations and determinations affecting pharmacy. Included are the applicable common law principles, codes of ethics, fair trade, and labor relations.

Pharmacy 55-56—Pharmacy and chemistry of medicinals. Four hours lecture, 4 pts. each session. (Beginning in 1958-1959, three hours lecture, 3 pts. each session.) Professor Malspeis.

A systematic study of the pharmacy and chemistry of organic pharmaceutical and medicinal substances with attention to biochemical and pharmacological considerations.

Prerequisite: *Pharmacy 24 and Chemistry 43*.

GENERAL EDUCATION COURSES

English A1-A2—English. Three hours lecture. 3 pts. each session. Mr. Levin.

Instruction in rhetoric and usage; analysis of literary forms; selected readings in British and American literature.

Mathematics 7-8—Mathematical analysis. Three hours. 3 pts. each session. Mr. Fleshler.

Winter Session: Selected topics from college algebra and trigonometry essential as a preparation for analytic geometry and calculus.

Spring Session: Elements of analytic geometry and calculus.

Physics 1-2—General physics. Two hours lecture, two hours laboratory, and one hour conference. 4 pts. each session. Mr. Samios.

An introductory course in general physics giving the student a survey of the results, methods, and spirit of the science, with laboratory practice.

Social Science A1-A2—Social science and ethics. Three hours. 3 pts. each session. Dr. Lipman.

Through discussion and interpretation of selected readings, analysis is made of culture, personality, and democratic social organization in order to provide students with insight into the need for responsible moral conduct in the pursuit of the democratic ideal. The course is intended to direct the student's attention to his moral obligations to himself and others in his professional and social life.

SPECIAL COURSE

Mathematics XI or RXI—Review of fundamentals of mathematics. One hour lecture and one hour recitation. No point value. Either session.

Designed to review the fundamental processes of mathematics for those freshmen students whose background in this subject has been found to be inadequate.

GRADUATE COURSES

Courses are given at the College of Pharmacy unless otherwise indicated.

Biology 101 or R101—Microbiological control methods. Two hours lecture and eight hours laboratory. 6 pts. either session.

Official procedures for sterilization, tests for sterility, toxicity, and pyrogenic substances, microbiological assays of antibiotics, and identity of drug contaminants.

Prerequisite: *Biology 55* or equivalent.

Laboratory fee: \$25.

Pharmaceutical Chemistry 105-106 or R105-R106—Preparation of chemotherapeutic and pharmaceutical agents. One hour conference and ten hours laboratory. 5 pts. each session. Professors Di Somma and Malspeis.

Prerequisite: Laboratory course in synthetic organic chemistry.

Laboratory fee: \$35 each session.

Pharmaceutical Chemistry 107-108—Pharmaceutical control methods. One hour conference and four hours laboratory. 2½ pts. each session. Professor Taub.

Advanced methods of quantitative and organic analysis applied to pharmaceutical products. Systems of control records are discussed. Instrumental methods of analysis are stressed.

Prerequisite: Quantitative analysis and organic chemistry.

Laboratory fee: \$25 each session.

Pharmaceutical Chemistry 201-202—Chemistry of natural medicinal products. Two hours lecture and seminar. 2 pts. each session. Professor Malspeis. *Given in 1957-1958 and alternate years.*

Discussion of the structures, properties, syntheses, and reactions of naturally occurring and related compounds with emphasis on recent developments.

12 • COURSES OF INSTRUCTION

Pharmaceutical Chemistry 205-206—Modes of drug action. Three hours lecture and seminar. 3 pts. each session. Professors Clay and Malspeis. *Given in alternate years; not given in 1957-1958.*

The theoretical basis for pharmacological action. The relation of the physical and chemical properties of certain drugs to their effects on cell function.

Pharmacognosy 101-102—Applied pharmacognosy. One hour lecture or conference and eight hours laboratory. 5 pts. each session. Professor Pokorny.

The application of pharmacognosy to the examination of products of medicinal and economic importance.

Prerequisite: Botany and pharmacognosy.

Laboratory fee: \$25 each session.

Pharmacognosy 103 or R103—Microscopical control methods. One hour lecture or conference and two hours laboratory. 2 pts. either session. Professor Pokorny.

The microexamination of basic materials and finished products in conjunction with chemical and microbiological examinations.

Prerequisite: Botany and pharmacognosy.

Laboratory fee: \$10.

Pharmacology 107-108 or R107-R108—Drug screening and bio-assay methods. Four hours or six hours laboratory. 2 or 3 pts. each session. Professor Clay.

Standard screening techniques for the determination of toxicity and therapeutic value. The quantitative standardization of official and nonofficial drugs by biological methods and the applications of statistical methods of analysis to biological experimentation.

Laboratory fee: \$25 each session.

Admission only with permission of the instructor.

Pharmacy 101 or R101—Dermatologic and other topical vehicles. Four hours conference and laboratory. 2 pts. either session. Professor Chavkin.

A study of the function of the vehicle in relation to the remedial and other actions of products for topical application with emphasis on the formulation and compounding of ointments and lotions for dermatologic use.

Laboratory fee: \$10.

Pharmacy 109-110—Industrial pharmaceutical manufacturing. One hour conference and seven hours laboratory. 4½ pts. each session. Professor Chavkin.

Experience in the formulation of pharmaceutical products through the use of industrial manufacturing equipment, with emphasis on the manufacture of compressed and coated tablets.

Laboratory fee: \$40 each session.

Pharmacy 219-220—Projects in drug-product development. One hour lecture and seminar. 2 pts. each session. Professor Taub.

Bibliographical research and the preparation of reports dealing with the development, evaluation, and marketing of new drugs. Guest lecturers and field trips supplement the class work.

Obligatory for all candidates for the M.S. degree.

Research 201-202 or R201-R202—Research. Conferences and original investigations on which the Master's dissertation is based. Points variable. Professors Chavkin, Clausen, Clay, Dashowitz, Di Somma, Kanig, Leuallen, Liberman, Malspeis, Pokorny, and Taub.

Admission only with permission of the instructor.

Laboratory fee: \$25 each session.

COURSES OFFERED IN OTHER DEPARTMENTS

A wide selection of graduate courses offered in the Departments of Botany and Chemistry of the Faculty of Pure Science, in Teachers College, the School of Engineering, the School of Public Health, and the College of Physicians and Surgeons may be included in the program of studies for the Master of Science degree under the Faculty of Pharmacy.

ADMISSION, REGISTRATION, AND FEES

I. ADMISSION TO THE BACHELOR OF SCIENCE PROGRAM

Admission to the four-year undergraduate program leading to the Bachelor of Science degree is based upon the following requirements:

1. The candidate must be in good health and must show evidence of good character.
2. The candidate must present evidence of having satisfactorily completed at least sixteen units in an approved four-year high school, thereby satisfying the requirements of the New York State Education Department for admission to study pharmacy. The following program is recommended:

| | <i>Units</i> |
|----------------------------------------------------|-----------------|
| English, four years | 4 |
| American history and social studies, not less than | 2 |
| Elementary algebra | 1 |
| Intermediate algebra | ½ |
| Plane geometry | 1 |
| Foreign language (one) | 2 or 3 |
| Laboratory science (biology, chemistry, physics) | 1 |
| Academic electives | <u>3½ or 4½</u> |
| Total | 16 |

Consideration will be given a candidate whose preparation differs in some particular from the one outlined if his general scholastic qualifications so warrant.

Procedure

Requests for application forms for admission should be addressed to the Registrar, College of Pharmacy, 113 West 68th Street, New York 23, N.Y.

The application, with all information from the applicant and from the school complete to date of filing, should be filed by June 1 of the year the candidate desires to enter. Later applications will be given consideration in accordance with the circumstances. Candidates who do not expect to graduate until June may submit their high school records through the seventh term, in which case the report on final senior grades and certification of graduation should be sent to the College by the school.

An applicant accepted for admission or readmission is required to furnish a \$50 commitment fee, which will be credited to tuition and other fees at the time of registration. This fee is not refundable if the applicant withdraws.

Advanced Standing

Courses completed in the School of General Studies will be accepted in lieu of equivalent courses given in the four-year curriculum of the College of Pharmacy. Students who have completed in the School of General Studies courses equivalent to those of the freshman year may be admitted to sophomore standing. For information concerning the specific courses which are acceptable, consult the Admissions Office of the College of Pharmacy.

Candidates for admission to advanced standing, on the basis of certificates of transfer from other colleges, should fill out the appropriate application blank to be obtained from

the Registrar of the College. Each candidate must also present an official transcript of his college record and a certificate of honorable dismissal, together with a marked catalogue of the institution previously attended, showing the courses he has pursued there. Advanced standing may be granted for previous study in nonpharmaceutical colleges, but a time credit exceeding one academic year of the baccalaureate course is not permitted. The candidate must satisfy all of the requirements for admission to the Bachelor of Science course.

Admission Based on Foreign Study

Candidates for admission whose preparation is based upon study in a foreign country must submit all original credentials from the schools attended, complete certified translations of all credentials, a personal application for admission to the College of Pharmacy, and such forms as are required by the New York State Education Department. The necessary forms may be obtained from the Registrar's office. Admission is based upon evaluation of records made by the New York State Education Department and the requirements set by the College of Pharmacy.

II. ADMISSION TO THE MASTER OF SCIENCE PROGRAM

Admission to graduate study leading to the Master of Science degree is based upon the following requirements:

1. The applicant must hold a baccalaureate degree in pharmacy from an approved institution.
2. The applicant must supply official transcripts of records covering all previous college or university study.

Procedure

Requests for application forms for admission to graduate study should be addressed to the Dean.

New students normally begin their graduate study in September and applications received prior to February 1 of the year the applicant wishes to begin his study will be considered on that date. Later applications will be considered within a few days after their receipt. New students will be admitted to the spring session only if facilities are available and a suitable program can be planned.

An applicant accepted for admission is required to furnish a \$50 commitment fee which will be applied toward tuition and other fees at the time of registration. This fee is not refundable if the applicant withdraws.

REGISTRATION

The office of the Registrar is open daily from 9 A.M. to 5 P.M. At the beginning of each session, during the registration period stated in the Academic Calendar, each student must register in person for the courses he proposes to take during that session. Later registration of students in the upper classes is permitted only upon the payment of an additional fee of \$5.00, satisfactory cause for such delay having been shown. Students are held accountable for absences incurred owing to late enrollment. No new student will be admitted later than two weeks after the opening date of any session.

The fees required at the time of registration include the registration fee, the breakage deposit, the student activities fee, and the tuition fee for the session payable in full or in two equal installments (see schedule below).

A veteran who expects to have his expenses defrayed under Public Laws 550 and 894 must present his certificate of eligibility at the time of registration for courses.

FEEs AND CHARGES

The fees to be paid by students are subject to change at any time at the discretion of the Trustees. Those in force for 1957-1958 are as follows:

| | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| Registration fee for each session | \$ 10.00 |
| Tuition fee for either degree program, each session | 345.00 |
| (A program of less than fifteen points in the College of Pharmacy will be charged for at the rate of \$23 per point. Courses taken in other departments of the University will be charged for at the rate of \$30 per point.) | |
| Breakage deposit for each session (refundable less charges for replacement, materials, and depreciation). | |
| Freshmen | 25.00 |
| Upperclassmen and graduate students | 45.00 |
| Application fee for a degree | 20.00 |
| Student activities fee (B.S. course only), each session | 10.00 |
| Privileges | |
| Registration after dates set in Academic Calendar | 5.00 |
| Transcripts of record | 1.00 |

Rebates

The registration fee, the fee for application for a degree, the commitment fee, and the late-registration fee are not subject to rebate. Tuition fees will be returned only up to and including the last day for change of program, as announced in the Academic Calendar. After this day, the Registrar may authorize a partial return of tuition fees but only in cases of total withdrawal from the College. If a rebate is allowed, it will be reckoned from the day on which the Registrar receives written notice from the student. The adjusted charge for tuition shall be 10 percent for each week or part thereof following the second Saturday of the winter session or the second Saturday of the spring session up to the date on which the student officially withdraws. Consequently, when such withdrawal takes place on or before the second Saturday of the winter session or on or before the second Saturday of the spring session, there shall be no charge for tuition.

PAYMENT OF TUITION

One of two methods for the payment of the tuition fee for the baccalaureate or Master's programs for the term may be elected by the candidate, as indicated below:

1. Pay in full for the term at the time of registration.
2. Pay the registration fee, the student activities fee, the breakage deposit, and one half of the tuition at the time of registration in each term and one half of the tuition at midterm. (See Academic Calendar for dates.)

BOOKS AND SUPPLIES

It is estimated that an expenditure of \$300 will cover the cost of the textbooks and necessary apparatus required for the program leading to the Bachelor of Science degree.

AWARDS

The College of Pharmacy reserves the right to withhold the award of any honor, scholarship, or prize if in its opinion no candidate has exhibited qualifications justifying the award or if the amount of the accumulated income in the fund is insufficient.

Applications for the graduate fellowships must be made before April. 1.

GRADUATE FELLOWSHIPS

Bigelow. The Bigelow Fellowship for research in pharmacy, established through the bequest of Clarence O. Bigelow, treasurer of the College from 1897 to 1937, is awarded annually to students possessing the baccalaureate degree from Columbia University College of Pharmacy or from other colleges of pharmacy maintaining equivalent courses of study and standards. The incumbent will give a stipulated amount of teaching service and will undertake graduate studies leading to the Master of Science degree in the College of Pharmacy. The value of the fellowship is \$1,200, and tuition fees will be remitted during the period covered by the fellowship.

Plaut. The Isaac Plaut Fellowship for the encouragement of graduate study and original research, founded by Albert Plaut in memory of his father, Isaac Plaut, is awarded annually to that candidate for the Columbia University degree of Bachelor of Science in pharmacy who has shown during his full course of study the greatest taste and aptitude for original investigation. The choice of the institution for the graduate study and the program are subject to approval by the Faculty of the College of Pharmacy.

The value of the fellowship is about \$1,200, the annual income of the fund. Payment will be made in two equal installments, one on September 15 and one on January 15, provided that the fellow continues faithfully to pursue the work undertaken. In case of failure to do so, he will forfeit all further privileges and emoluments conferred upon him by his appointment to the fellowship.

Pharmacy Foundation Fellowships. The American Foundation for Pharmaceutical Education offers fellowships for graduate study in accredited colleges of pharmacy. Applicants must furnish evidence of acceptance for graduate study at the college they desire to enter. The grants cover tuition and include an amount for living expenses. Further information may be had from the American Foundation for Pharmaceutical Education, 1507 M Street, N. W., Washington 5, D.C.

Harry Taub Memorial Fellowship. The Harry Taub Memorial Fellowship, established by Mr. and Mrs. Richard Taub in memory of their son, Professor Harry Taub, for many years a member of the faculty of this college in the Department of Pharmacology, is awarded annually to a member of the senior class who is qualified to pursue graduate work at the College of Pharmacy. The value of the fellowship is about \$200, the annual income of the fund, to be applied toward the tuition fees of the graduate year.

GRADUATE ASSISTANTSHIPS

Teaching assistantships carrying an annual stipend of \$1,200 are available to graduate students with superior qualifications.

Application should be made at the time of application for admission to graduate study.

SCHOLARSHIPS

Alexander Block Memorial Scholarship. The Alexander Block Memorial Scholarship, founded by the employees of the Block Drug Company in memory of Alexander Block (1907), is awarded annually to a student of sophomore standing on the basis of character and scholastic aptitude as demonstrated during the freshman year. The value of the award is about \$100, the annual income of the fund, to be applied toward the tuition fees of the sophomore year.

Borden Scholarship Award in Pharmacy. This award, founded by The Borden Company Foundation, Incorporated, and valued at \$300, is given annually to the student of senior standing who has achieved the highest average grade of all other similarly eligible students in all college work preceding the senior year. In the event that the Dean finds it inappropriate to make the award in any given academic year, it may be deferred, subject to the provision that only one award shall be made during any one academic year.

J. Leon Lascoff Memorial Scholarship. The J. Leon Lascoff Memorial Scholarship, founded by Dr. Frederick D. Lascoff in memory of his father, J. Leon Lascoff, Trustee, 1916–1940, and a vice president of the College, 1940–1943, is awarded annually to a student of senior standing on the basis of excellence in all prior courses in dispensing pharmacy. This award of \$200 is to be applied toward the tuition fees of the senior year.

Henry Pfeiffer. Established as a memorial to Henry Pfeiffer by the trustees of his estate, this fund provides scholarships of \$200 each for as many as three worthy and capable sophomore students. The scholarships are awarded on the basis of financial need, scholarly ability, and the personal qualifications of the applicant for the practice of pharmacy. They are ordinarily awarded to students for one year only, although students of promise may receive scholarship aid in subsequent years if funds are available. Scholars receive one half of the grant at the beginning of each session, and the amount received must be applied to tuition payments. If the scholar fails to maintain an average of *B* in his studies, or if for any other reason his continued holding of a scholarship is found to be undesirable, the appointment may be terminated at the close of the respective session.

Pharmacy Foundation Scholarships. The American Foundation for Pharmaceutical Education has provided two scholarships of \$200 each, awarded to competent students of junior or senior standing and in need of such support. Students receive one half of the grant at the beginning of one term and the balance at the beginning of the next term, if their scholastic standing so warrants and the need continues. The funds so received must be applied toward tuition payments for the respective terms.

George J. Seabury. The George J. Seabury Scholarship, founded by Dr. Henry C. Lovis in memory of his uncle, George J. Seabury, for many years a member and patron of the College, is awarded annually to that member of the junior class who has maintained the highest standing during the three years. The value of the scholarship is about \$200, the annual income of the fund, to be applied toward the tuition fees of the senior year.

PRIZES

Alumni Association. The Alumni Fund of the College of Pharmacy provides annually for a gold, a silver, and a bronze medal to be presented at Commencement to the three students having attained respectively the first, second, and the third highest standing in all branches taught during the senior year.

Breitenbach. The Max J. Breitenbach Prize of \$100, accompanied by a certificate, is offered annually by the Trustees of the College of Pharmacy in memory of Max J.

Breitenbach, for many years a devoted trustee, and is awarded for the highest proficiency in the senior class.

Bristol Award. The Modern Drug Encyclopedia is offered annually by Bristol Laboratories, Incorporated, to the senior who has made a material contribution in advancing the interests of his class.

Class of 1922 Samuel B. Reiman Award. The Class of 1922 Samuel B. Reiman Award, consisting of the latest edition of the United States Dispensatory suitably embossed on the cover, is presented to the president of the graduating class in memory of Samuel B. Reiman, president of the Class of 1922, who died in January, 1947, while preparing for the Twenty-fifth Anniversary of the Class, at which time a gift was to be presented to the College of Pharmacy.

Diekman. The Diekman Prize, founded in 1930 by the Dante Circle, in honor of the late Dr. George C. Diekman, consists of a gold charm and is awarded to that graduate who has attained the highest average in theoretical pharmacy in the final year of the course.

Dohme. The Louis Dohme Prize of \$50, founded by Ernest Stauffen in memory of Louis Dohme, is awarded annually to that student of the junior year who exhibits the best practical knowledge of the drugs of the United States Pharmacopeia and National Formulary, as determined by the laboratory records and examination in pharmacognosy.

Kappa Psi. The Gamma Chapter of the Kappa Psi Fraternity offers annually a gold medal to be awarded to that candidate for the degree of Bachelor of Science in pharmacy who attains the highest standing throughout the four years of the course.

Lehn and Fink. A gold medal, offered by Lehn & Fink Products Corporation, of New York City, is awarded annually to that candidate for the degree of Bachelor of Science in pharmacy who attains the highest average in pharmaceutical analysis.

Leiterman. A gold medal, offered annually by Miss Lillian Leiterman (1911), is awarded to that woman graduate who has maintained the highest standing throughout the entire four years of the course.

Merck Awards. Merck and Company offers a certificate and a set of reference books to the graduate who attains the highest average in pharmacology and the same to that graduate who attains the highest average in dispensing pharmacy.

New York State Pharmaceutical Association. A year's membership is offered by the New York State Pharmaceutical Association to that graduate who, in the opinion of the class, has been foremost in promoting student welfare.

Olshansky Memorial. A gold medal, founded by the students of this college in attendance in 1923-24, in memory of their beloved instructor, Jacob Calman Olshansky, whose death occurred in that academic year, is awarded annually to that graduate who has attained the highest average in dispensing pharmacy in the final year of the course.

Rho Pi Phi. This award is offered by the New York Alumni Club of Rho Pi Phi International Pharmaceutical Fraternity, in memory of Hyman Wolf, a founder of the fraternity. The sum of \$100 is awarded annually to the student entering his senior year with the highest average grade in all courses given in the Pharmacy Department during the preceding years of the curriculum.

Rosen Award. A United States Bond of \$50 at maturity given by Max Rosen (1918) is awarded to the junior student who submits the best essay on merchandising or management based on his observation and experience while employed in a pharmacy.

Squibb. The E. R. Squibb Prize of \$100, offered by E. R. Squibb and Sons in memory of Dr. E. R. Squibb, former lecturer in the College, is awarded annually to that student who exhibits the greatest proficiency in analytical chemistry during his sophomore year.

EVENING COURSES

Several courses in laboratory technology and one in industrial pharmaceutical manufacturing, which normally do not carry credit toward a degree, are offered in the evening during the winter and spring sessions.

Admission to these courses is based upon graduation from an accredited high school, evidence of completion of the prerequisite courses, and an interview preceding or during the registration period with the instructor in charge of the course the student desires to pursue.

FEES AND CHARGES

| | |
|-----------------------------------|----------|
| Registration fee for each session | \$ 5.00 |
| Tuition fee, per point | 23.00 |
| Laboratory fee | Variable |

CONDENSED EVENING COURSE CALENDAR

| | |
|--------------|--------------------------------------------------------------|
| September 16 | Monday. Registration. |
| September 26 | Thursday. Winter-session classes begin. |
| November 5 | Tuesday. Election Day. Holiday. |
| November 28 | Thursday, through December 1, Sunday. Thanksgiving holidays. |
| December 23 | Monday, through January 5, 1958, Sunday. Christmas holidays. |
| January 20 | Monday, through January 23, Thursday. Final examinations. |
| February 3 | Monday. Registration. |
| February 5 | Wednesday. Spring-session classes begin. |
| March 30 | Sunday, through April 6, Sunday. Easter holidays. |
| May 26 | Monday, through May 29, Thursday. Final examinations. |

COURSES OFFERED

Biology e31—Mycology. Two hours lecture and two hours laboratory. 3 pts. Winter.

This course includes the cultural, biochemical, and microscopic characteristics of the molds (fungi) and actinomycetes known to be the causative agents of diseases in man and animals.

Special emphasis is placed upon the identification and classification of pathological specimens.

Breakage deposit, \$10. Laboratory fee, \$10.

Prerequisite: *Biology e35* or equivalent.

Biology e33—Routine urine analysis and blood chemistry. One and one-half hours lecture and two and one-half hours laboratory. 3 pts. Winter.

This course covers the application of chemical, physical, and microscopical techniques to the routine examination of urine and the routine chemical determinations of the blood constituents.

Instrumental techniques and methods will be included.

Breakage deposit, \$15. Laboratory fee, \$5.

Prerequisite: *G.S. Chemistry 3-4* and *G.S. Zoology 1-2* or equivalents.

Biology e34—Advanced urine analysis and blood chemistry. One and one-half hours lecture and two and one-half hours laboratory. 3 pts. Spring.

This course covers the application of specialized techniques to the examination of urine, blood, and body fluids.

Breakage deposit, \$15. Laboratory fee, \$5.

Prerequisite: *Biology e33* or equivalent.

Biology e35—General bacteriology. Three hours lecture and five hours laboratory. 5½ pts. Winter.

This course deals with the cultural, biochemical, and microscopic characteristics of microorganisms known to be the causative agents of disease. It includes the preparation of media, special staining procedures, and the use of bacteriological methods in the examination of water, throat cultures, and sputum. The principles of immunology, taxonomy, and public health are introduced.

Breakage deposit, \$10. Laboratory fee, \$5.

Prerequisite: *G.S. Chemistry 3-4* and *G.S. Zoology 1-2* or equivalents.

Biology e41-e42—Histology and histological technique. Two hours lecture and six hours laboratory. 5 pts. each session.

The course deals with microscopic anatomy of the cells and tissues of mammals. The laboratory work consists of the study of prepared cells and tissues as well as the important techniques for the preparation of mammalian tissues for histological study.

Breakage deposit, \$10. Laboratory fee, \$5.

Prerequisite: *G.S. Chemistry 3-4* and *G.S. Zoology 1-2* or equivalents.

Biology e45—Parasitology I. One hour lecture and three hours laboratory. 2½ pts. Winter. Dr. Clausen.

The protozoa are studied with special emphasis on parasitic forms causing human and animal disease. The morphology and physiology as well as the ecological interrelationships of the protozoans are considered. The laboratory stresses methods of identification and classification.

Breakage deposit, \$10. Laboratory fee, \$5.

Prerequisite: *G.S. Chemistry 3-4* and *G.S. Zoology 1-2* or equivalents.

Biology e46—Parasitology II. One hour lecture and three hours laboratory. 2½ pts. Spring. Dr. Clausen.

Worms are studied with special emphasis on parasitic forms causing human and animal disease. The morphology and physiology as well as the ecological interrelationships of the worms are considered. The laboratory stresses methods of identification and classification.

Breakage deposit, \$10. Laboratory fee, \$5.

Prerequisite: *G.S. Chemistry 3-4* and *G.S. Zoology 1-2* or equivalents.

Biology e47—Parasitology III. One hour lecture and two hours laboratory. 2 pts. Winter. Dr. Clausen.

The Arthropoda are studied with special emphasis on insects, spiders, and closely related forms causing human and animal disease. The manner in which they serve as vectors of pathogenic organisms, as well as the deprecations caused in stored products, is discussed. The laboratory is concerned with methods of identification and classification.

Breakage deposit, \$10. Laboratory fee, \$5.

Prerequisite: *G.S. Chemistry 3-4* and *G.S. Zoology 1-2* or equivalents.

Biology e63—Routine hematology. One and one-half hours lecture and two and one-half hours laboratory. 3 pts. Winter.

This course involves blood cell counting, differentials, and the study of normal and abnormal blood smears. Other tests include sedimentation rate, coagulation time, and hemoglobin estimation.

Breakage deposit, \$15. Laboratory fee, \$5.

Prerequisite: *G.S. Chemistry 3-4* and *G.S. Zoology 1-2* or equivalents.

Biology e64—Advanced hematology. One hour lecture, one hour seminar, and two hours laboratory. 3 pts. Spring.

A study of the cells found in peripheral blood and bone marrow smears. Blood typing and the management of the Blood Bank will be considered.

Breakage deposit, \$10. Laboratory fee, \$5.

Prerequisite: *Biology e34* or equivalent.

Biology e136—Advanced microbiology and immunology. Four hours lecture and four hours laboratory. 6 pts. Spring.

This course includes the critical study of bacteria with emphasis upon the nutritional requirements for growth, products of metabolism, factors dealing with bacterial variation, and antigenic structure. Vaccines are prepared and standardized, antisera are developed through animal inoculation, and the measures of immunity are determined by serological reactions. Consideration is given to the cultivation of anaerobes, viral agents, and phages. Microbial antagonism and microbiological assays are part of the laboratory exercises.

Each student is required to conduct at least one seminar each session on an assigned topic concerned with modern trends in microbiology.

Breakage deposit, \$10. Laboratory fee, \$10.

Prerequisite: *Biology e35* and *G.S. Chemistry 43* or their equivalents.

Biology e163—Serology. Three hours lecture and one hour seminar. 4 pts. Winter.

This course provides lectures and seminars on the recent advances in theories and methods concerned with the physiology and biochemistry of microorganisms, microbiological assays, serological procedures and analysis.

Prerequisite: *Biology e35* and *Biology e136* or equivalents.

Pharmacy e-107-e108—Industrial pharmaceutical manufacturing. One hour lecture and three hours laboratory. 2½ pts. each session. Professors Chavkin and Kanig.

Experience in the formulation of pharmaceutical products through the use of industrial manufacturing equipment, with emphasis on the manufacture of compressed and coated tablets.

Laboratory fee, \$40 each session.

GENERAL INFORMATION

A BRIEF HISTORY OF THE UNIVERSITY

Columbia University was founded in 1754. It was established as King's College, by a royal grant of George II, "for the Instruction of Youth in the Learned Languages and Liberal Arts and Sciences."

For nearly a century after its founding the College was situated in lower Manhattan on a tract of land deeded by Trinity Church, extending from Barclay Street to Murray Street and from Church Street to the North River, not far from the present City Hall. Among its early students were Alexander Hamilton, John Jay, Robert Livingston, and Gouverneur Morris, all remembered for the prominent part they took in the political and military events which led to independence of the colonies and the establishment of the federal government.

The activities of the College were suspended during the Revolutionary War and its building requisitioned by the Continental armies and later by the British forces of occupation. It was reopened in 1784, as Columbia College, under a charter granted by the state of New York. In 1857 it moved to 49th Street and Madison Avenue. The new quarters were thought at the time to be only for temporary use, since plans had been drawn for a group of buildings to be erected on the present site of Rockefeller Center. For various reasons these plans were not carried out, and the College remained at the Madison Avenue site for forty years.

With the addition of the School of Law (1858), the College of Physicians and Surgeons (1860), the School of Mines (1864), the organization of the Graduate Faculty of Political Science (1880), the School of Architecture (1881), Barnard College (1889), the Graduate Faculty of Philosophy (1890), the Graduate Faculty of Pure Science (1892), and the School of Engineering (1896), Columbia College became a university in all but name.

Outgrowing its quarters at 49th Street, the College moved a second time to its present location overlooking the Hudson River, on a site where a part of the Battle of Harlem Heights was fought during the withdrawal of Washington's army from New York in 1776. Classes opened on the Morningside Heights campus in 1897. In its new home the College grew rapidly, especially after the election of Dr. Nicholas Murray Butler as its President in 1901. Teachers College became a part of Columbia College in 1898 and the College of Pharmacy was added in 1904.

By act of the State Legislature the name of the institution was changed in 1912 to Columbia University in the City of New York. Its coordination and expansion continued. The School of Journalism was established in 1913, the School of Dental and Oral Surgery in 1916, and the School of Library Service in 1926. The instruction of Union Theological Seminary was brought into association with that of the University in 1928. The New York School of Social Work was formally affiliated with the University in 1940. The School of International Affairs was established in 1946 and the School of General Studies, a reorganization of University Extension (1910), in 1947. The School of Dramatic Arts and the School of Painting and Sculpture were established in 1947 and the Graduate School of Business, a reorganization of the School of Business (1916), in 1949.

Today the University is one of the great centers of learning, serving the whole nation and many foreign countries. Its living alumni, numbering more than one hundred thousand, are to be found in all parts of the world. Every year it graduates nearly eight thousand students who participate in the arts, sciences, professions, and affairs of this and other nations.

HOUSING

Booklets describing the University residence halls and application blanks for rooms may be obtained (for men) from the Men's Residence Halls Office, 125 Livingston Hall, Columbia University, New York 27, or (for women) from the Johnson Hall Office, 411 West 116th Street, New York 27. Rates for the academic year are \$200 to \$410 for men and \$230 to \$455 for women. Optional prepaid board plans are available in the men's residence halls. Women students living in Johnson Hall are required to take breakfast and dinner there at a cost of \$350 for the academic year.

The University maintains a registry of off-campus accommodations for the convenience of students and faculty members. For an information sheet describing this service, write the Registry of Off-Campus Accommodations, 115 Livingston Hall, Columbia University, New York 27, N.Y.

International House, while not a University residence hall, is primarily a residence for students at Columbia University and other colleges and universities in New York City. It offers comfortable accommodations at reasonable rates. For further information write directly to Committee on Admissions, International House, 500 Riverside Drive, New York 27, N.Y.

The King's Crown Hotel, 420 West 116th Street, near the campus, is owned by the University. It provides accommodations at reasonable rates for relatives and guests of members of the University community.

DINING ROOMS

Men and women students may obtain breakfast, lunch, and dinner in the several dining rooms in John Jay Hall and in Teachers College cafeteria, Dodge Hall. The dining room of Johnson Hall is open for breakfast, lunch, and dinner to Johnson Hall residents, but only for lunch to nonresident students.

FOREIGN STUDENTS

The Office of the Foreign Student Adviser, 109 Low Library, has been established to assist foreign students in solving their particular problems and to insure coordination of all University activities relating to foreign students. The Foreign Student Adviser will endeavor to promote social activities on behalf of students from other lands, with the purpose of increasing their contact with American customs and traditions.

All questions arising between foreign students and the United States Immigration and Naturalization Service will be handled by this office. Through it also should pass requests for all types of certifications to be used for immigration, foreign exchange, and other purposes.

Informal discussion classes are conducted in the College of Pharmacy under the leadership of the Dean for the purpose of thorough orientation in American pharmacy. Selected specialists drawn primarily from the New York area lead discussions on retail pharmacy, industrial pharmacy, hospital pharmacy, journalism, law, organizations, and other aspects of pharmaceutical interest.

STUDENT ORGANIZATIONS

These organizations are under the general direction of a Committee on Student Activities consisting of members appointed from the faculty and teaching staff.

24 • GENERAL INFORMATION

Except by permission of the faculty, any student of the College of Pharmacy who is not in good and regular standing scholastically is ineligible to participate in any athletic or nonathletic competition, organization, performance, publication, or any other extra-curricular activity.

Student Branch of the American Pharmaceutical Association

The Student Branch of the American Pharmaceutical Association at Columbia is an active professional organization. Its purpose is to bring to the attention of students the problems, advances, and other professional activities of the American pharmacist of today so that they may be better prepared to deal with such matters in the future. Guest lecturers of prominence, professional displays and exhibits, contests, and other activities are conducted by the A.Ph.A. Student Branch each year. Membership fees include subscriptions to either or both of the monthly journals published by the parent group.

The Student Council

The Columbia University Student Council, composed of elected representatives from the students of the several schools and faculties of the University, represents the students in matters affecting the student body as a whole, with the object of promoting understanding and cooperation among the students, faculty, and administration.

The Student Council in the College of Pharmacy consists of elected representatives from the several classes. It cooperates with and is responsible to the Committee on Student Activities in the supervision of the interests and activities of the student body.

Fraternities, Sororities, and Societies

The following fraternities maintain active chapters at the College: Kappa Psi, Rho Pi Phi, Delta Sigma Theta, Apha Zeta Omega, and Sigma Tau Epsilon. One sorority, Lambda Kappa Sigma, is active in the College.

STUDENT EMPLOYMENT

Students seeking employment in retail pharmacy should consult with Professor Chavkin of the Pharmacy Department. A bulletin board in the student lounge lists current job opportunities.

STUDENT COUNSELING

Each student is assigned to a specific member of the faculty for continued guidance and counseling during the entire program of study.

RELIGIOUS LIFE AND WORK

The life of the University finds religious expression through St. Paul's Chapel and Earl Hall and through the ministry of the Chaplain and those associated with him in his work. The Chaplain of the University is assisted by three religious counselors: the counselor to Protestant students; the counselor to Roman Catholic students; and the counselor to Jewish students.

Daily services are held in the Chapel, and students are urged to familiarize themselves with the schedules, which are conveniently posted.

There are a number of student religious organizations to which the Chaplain and counselors serve as advisers and with which students are cordially urged to affiliate themselves. Through the counselors, and through interfaith activities, the unity of the religious life of the University is maintained while at the same time the major religious groups are represented and carry on their distinctive activities.

The Chaplain and the counselors are available for consultation at the Chapel or in their offices in Earl Hall.

Earl Hall was given to Columbia University by the late William Earl Dodge as a center for the religious and social activities of the students. On the main and upper floors, reached by the campus entrance, are the offices of the Chaplain and his staff and of the three religious counselors. These floors also contain an auditorium, a lounge, meeting room, kitchen, and other facilities.

THE LIBRARIES

The Libraries of the University, which are available to all students, contain more than two million volumes, exclusive of unbound pamphlets. The main collection is housed in the Nicholas Murray Butler Library at 114th Street. The various departments of instruction have special libraries to serve their needs. The Chemistry Library in Chandler Hall, the Natural Science Libraries in Schermerhorn Hall, and the Library of the College of Physicians and Surgeons in the Medical Center at 168th Street and Broadway are of particular interest to students in the College of Pharmacy.

The library of the College of Pharmacy contains more than thirteen thousand volumes including reference works on pharmacy and allied branches of science as well as an extensive series of periodicals in English and in foreign languages relating to chemistry, pharmacy, botany, and allied sciences, including all important journals of interest to pharmacists.

PUBLIC LIBRARIES

Students may use any of the public libraries of Greater New York. The central library building of the New York Public Library at Fifth Avenue and 42d Street houses one of the great reference libraries of the country, containing over three million volumes and including much material not found in the University Libraries. Books in the reference department of that library may be used only within the building. Students are expected to use the University Libraries for their work, and crowded conditions have made it necessary for the authorities of the Public Library to restrict the use of the reference library to books that are not available elsewhere. Books in the central circulation branch (42d Street entrance) and in other branches may be borrowed for home use by students who obtain a Public Library card. A branch of the Public Library is maintained in 101 Butler. Other branches in the vicinity of the University are: Riverside Branch, 190 Amsterdam Avenue; West 115th Street, near Seventh Avenue; West 100th Street, near Amsterdam Avenue; and George Bruce Branch, 518 West 125th Street.

GENERAL REGULATIONS

THE DEAN

The Dean is the executive officer of the faculty. It is his duty, under the direction of the President, to enforce the rules of the faculty and of the Board of Trustees and to administer discipline in the case of their violation.

STUDENTS

Each person whose registration has been completed will be considered a student of the University during the session for which he is registered unless his connection with the University is officially severed by withdrawal or otherwise. No student registered in any school or college of the University shall at the same time be registered in any other school or college, either of Columbia University or of any other institution, without the specific authorization of the dean or director of the school or college of the University in which he is first registered.

Students whose religious duties conflict at any time with academic requirements should apply to the Dean for an equitable solution.

The privileges of the University are not available to any student until he has completed his registration. Since, under the University statutes, payment of fees is a part of registration, no student's registration is complete until his fees have been paid. No student is permitted to attend any University course for which he is not officially registered, nor may any student register after the stated period unless he obtains the written consent of the Dean.

ACADEMIC DISCIPLINE

The continuance of each student upon the rolls of the University, the receipt by him of academic credits, his graduation, and the conferring of any degree or the granting of any certificate are strictly subject to the disciplinary powers of the University, which is free to cancel his registration at any time on any grounds which it deems advisable. The disciplinary authority of the University is vested in the President in such cases as he deems proper and, subject to the reserved powers of the President, in the dean of each faculty and the director of the work of each administrative board.

ATTENDANCE

Students are particularly requested to be in attendance at the beginning of the term in order to obtain full benefit from the course. No student will be admitted later than two weeks after the opening of the term.

Students are required to attend all classes. Absences for just cause, and without penalty, are permitted as follows: from a course meeting once weekly, twice; from a course meeting twice weekly, three times; from a course meeting three times weekly, five times; from a course meeting four times weekly, six times; from a course meeting five times weekly, seven times; and from a course meeting six times weekly, eight times. Each class meeting shall be construed as one period, whether it meets for one, two, three, or four hours. Tardiness counts as half an absence.

Each student is responsible for keeping a record of the date of each absence or lateness and the reason for it. A student who has had a communicable disease must report to

the University Medical Officer for examination and must present to the Registrar a note of approval for readmission to classes signed by the University Medical Officer.

A student who exceeds the permitted number of absences in a course may be summoned to appear before the Dean to show why he should not be debarred from examinations in the course.

WITHDRAWAL

An honorable discharge will be granted to any student in good standing and not subject to discipline who may desire to withdraw from the University; but no student under the age of twenty-one years shall be entitled to a discharge without the assent of his parent or guardian furnished in writing to the Dean. Students withdrawing are required to notify the Registrar in writing immediately.

The Dean may, for reasons of weight, grant a leave of absence to a student in good academic standing.

EXAMINATIONS, GRADES, AND CREDITS

All courses normally close with the written examinations held in January and May (see the Academic Calendar on the inside of the back cover). Apart from these examinations, the instructors having charge of the respective courses will hold tests to determine proficiency. These tests will constitute a part of the student's rating for report to the Registrar.

The student's performance in a course will be reported according to the following grades: *A*, excellent; *A-*, superior; *B*, very good; *B-*, good; *C*, fair; *C-*, poor; *D*, minimum pass; *F*, failure.

The grade of *F* will be reported to the Registrar for every course in which a student is absent from the final examination unless specific authorization to apply for a deficiency examination is obtained by the student from the Dean's office not later than the day of the examination.

When a grade of incomplete is reported in any course, the student must arrange to complete the work before the close of the following term to receive credit.

Reexaminations are held during the periods established by the faculty. They are open upon application filed in the office of the Registrar to students who have been absent for imperative reasons from a final examination. Only one reexamination is allowed in a given course. If a student fails to avail himself of the privilege of taking the stated reexamination following the completion of the course in which he is deficient, no further opportunity is afforded and a grade of *F* is recorded.

Each credit of work carried during a semester is awarded a quality point value in accordance with the following scale: each credit of a grade of *A* is multiplied by 7; *A-* by 6; *B* by 5; *B-* by 4; *C* by 3; *C-* by 2; *D* by 1; *F* by 0. The sum of the quality points thus obtained, divided by the total number of credits carried, is the quality point average.

On the basis of the individual's quality point average, the faculty will recommend advancement, probationary status, or dismissal for low scholarship in accordance with an index which has been established as a guide for such decisions. Recommendations for nomination to the Dean's List, for graduation, and for graduation with honors will be based on the quality point average.

Permission for a student to register in an equivalent course outside the College of Pharmacy may be granted by the Dean's office.

HONORS

Students who demonstrate outstanding scholastic ability and personal attributes become eligible for nomination to the Dean's List, for election to Rho Chi Society, and for the several scholarships and prizes described on pages 16-18.

The Dean's List, prepared at the close of each semester, bears the names of those students whose scholastic records are sufficiently outstanding to merit special recognition.

Rho Chi Society, the national pharmaceutical honor society, has as its fundamental objective the advancement of the pharmaceutical sciences through encouragement and recognition of high scholarship. Students who have achieved upper Junior and Senior status and whose scholarly and personal attainments have met the high standards of Rho Chi, are eligible for nomination to membership. On the same basis, the privilege may be extended to graduate students and alumni of the College of Pharmacy.

DIPLOMAS

Diplomas are issued at Commencement, in October, and in February and will be granted only upon action of the faculty.

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CONDENSED ACADEMIC CALENDAR

The complete Academic Calendar for the year 1957-1958 may be obtained from the Secretary of the University.

WINTER SESSION

- September 9 Monday, through September 12, Thursday. Registration in the B.S. and the M.S. courses.
- September 16 Monday. Winter session begins.
- September 26 Thursday. Morningside Heights classes begin.
- September 28 Saturday. Last day for making changes in B.S. and M.S. programs.
- October 12 Saturday. Columbus Day. Not a University holiday.
- November 5 Tuesday. Election Day. Holiday.
- November 11 Monday. Midterm date.
- November 28 Thursday, through December 1, Sunday. Thanksgiving holidays.
- December 2 Monday. Last day for filing applications for the degrees of B.S. and M.S. to be awarded in February.
- December 23 Monday, through January 5, Sunday. Christmas holidays.
- January 13 Monday, through January 17, Friday. Midyear examinations.

SPRING SESSION

- January 22 Wednesday, through January 24, Friday. Registration in the B.S. and the M.S. courses.
- January 27 Monday. Spring session begins.
- February 5 Wednesday. Morningside Heights classes begin.
- February 8 Saturday. Last day for making changes in B.S. and M.S. programs for the spring session.
- February 12 Wednesday. Lincoln's Birthday. Not a University holiday.
- February 22 Saturday. Washington's Birthday. Not a University holiday.
- March 3 Monday. Last day for filing applications for the degrees of B.S. and M.S. to be awarded in June.
- March 24 Monday. Midterm date.
- March 30 Sunday, through April 6, Sunday. Easter holidays.
- May 16 Friday. Last day for filing essays previously approved for the degree of M.S. to be conferred in June.
- May 19 Monday, through May 28, Wednesday. Final examinations.

COMMENCEMENT

- June 1 Sunday. Baccalaureate Service.
- June 3 Tuesday. Conferring of degrees.

